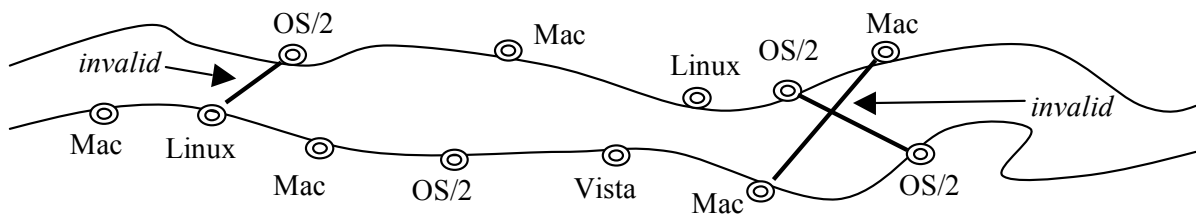
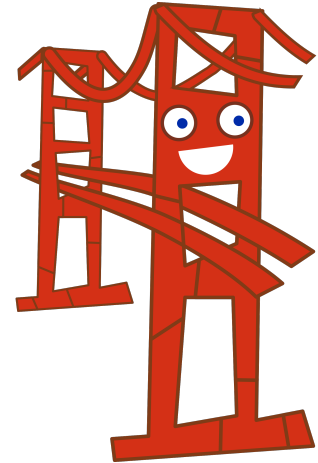


# The Bridges of Königsberg<sup>†</sup>

King Beer has a very hard region to rule, consisting of lots of cities with very sectarian operating system beliefs and high levels of trade. These cities are placed along a river, the Königsberg, along its Northern and Southern banks. The cities are economically separated from each other, since the river is wide and dangerous.

King Beer would like to build some bridges connecting opposite banks of the river. He was strongly advised against making bridges between cities with different operating system beliefs (those guys really hate each other). So, he is just going to build bridges between cities sharing the same operating system belief (even if the resulting bridges are quite long and strangely shaped). However, it is technical impossible to build bridges that cross other bridges. For the sake of fairness, each city can have at most one bridge.



*A section of the Königsberg showing some invalid bridges*

The economical value of a bridge is the sum of the trade values of the two cities it connects. The King wants to maximize the sum of all possible bridge values while minimizing the number of bridges to build.

## Task

Given two sequences of cities, compute the maximum possible sum of all bridge values and the smallest number of valid bridges necessary to achieve it.

## Input

The first line has an integer with the number  $S$  of samples. For each sample, the next line has an integer,  $C$ , indicating the number of cities on the Northern riverbank. Then, on each line, comes the city information with the form:

*cityName osType tradeValue*

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<sup>†</sup>A few minor changes have been made to the original version, which appeared in SWERC 2007 (18th of November), organized by Departamento de Informática da Faculdade de Ciências e Tecnologia da Universidade de Nova de Lisboa.

where, separated by an empty space, there are two non-empty strings, *cityName* and *osType*, with no more than 10 characters each, and *tradeValue* which is a non-negative integer not greater than  $10^6$ . Both strings are made of letters and digits. The sequence of lines represents the cities from left to right along the riverbank. Next, there is the same kind of information to describe the Southern riverbank.

## Constraints

- $1 \leq S \leq 4$  (Number of samples)  
 $0 \leq C \leq 1\,000$  (Number of cities on a riverbank)

## Output

For each sample, a line consisting of the maximum possible sum of all bridge values, one empty space, and the smallest number of valid bridges necessary to achieve it.

## Sample Input

```
2
3
mordor Vista 1000000
xanadu Mac 1000
shangrila OS2 400
4
atlantis Mac 5000
hell Vista 1200
rivendell OS2 100
appleTree Mac 50
1
atlantis Mac 5000
2
hell Vista 1200
rivendell OS2 100
```

## Sample Output

```
1002250 2
0 0
```